

Correlation between the existence of the palisades of Vogt and limbal epithelial thickness in limbal stem cell deficiency.

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Authors: Qihua Le, Yujing Yang, Sophie X Deng, Jianjiang Xu

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Public Summary:

BACKGROUND: The aims of the study were to investigate limbal epithelial thickness in subjects with limbal stem cell deficiency and to evaluate the correlation between the palisades of Vogt and limbal epithelial thickness. **DESIGN:** Cross-sectional observational study. **PARTICIPANTS:** Twenty-four subjects (39 eyes) with limbal stem cell deficiency and 20 normal controls (20 eyes). **METHODS:** Anterior segment optical coherence tomography and laser scanning confocal microscopy were performed to assess each quadrant of the limbus. **MAIN OUTCOME MEASURES:** Limbal epithelial thickness and palisades of Vogt morphology in each quadrant were characterized. The correlation between limbal epithelial thickness and palisades of Vogt was analysed. **RESULTS:** The average limbal epithelial thicknesses in eyes with limbal stem cell deficiency were 19.9%, 23.4%, 13.8% and 13.5% less than normal controls at superior, inferior, nasal and temporal limbus ($P = 0.008$, 0.006 , 0.014 and 0.011 , respectively). Limbal epithelial thicknesses within limbal quadrants with palisades of Vogt were similar to those measured in the same quadrants in normal controls, whereas limbal epithelial thicknesses in the superior, inferior, nasal and temporal quadrants without palisades of Vogt were 27.8%, 29.8%, 14.7% and 15.6% less than the limbal epithelial thickness in corresponding regions of normal eyes (superior and inferior: $P < 0.001$; nasal and temporal: $P = 0.005$). Limbal epithelial thickness in the nasal and temporal quadrants was significantly less than that in the superior and inferior quadrants, both in normal controls and in limbal stem cell deficiency subjects ($P < 0.001$ and $P = 0.019$). Regression analysis showed that limbal epithelial thickness had a significant correlation with the presence of palisades of Vogt in each quadrant (superior, $P = 0.002$; inferior, $P = 0.001$; nasal, $P = 0.047$; temporal, $P = 0.030$). **CONCLUSIONS:** A significant correlation was found between limbal epithelial thickness and the presence of palisades of Vogt. Limbal epithelial thinning as observed with anterior segment optical coherence tomography is a sign of limbal stem cell deficiency.

Scientific Abstract:

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